APPLICATION FOR UNITED STATES LETTERS PATENT

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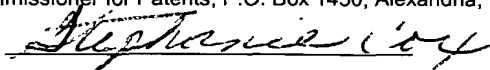*for*

METHOD AND SYSTEM FOR SHOPPING-CART IDENTIFICATION

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File No. 200205310-1

METHOD AND SYSTEM FOR SHOPPING-CART IDENTIFICATION

BACKGROUND OF THE INVENTION

[1]   A "shopping cart" is a well-known feature of conventional commercial websites, where a customer may choose items to purchase by "placing" such items into the shopping cart. By placing an item in the shopping cart, the customer causes the server computer (the computer hosting the commercial website) to store the chosen item in a database and to associate the customer with the chosen item. At any time during the browsing session, the customer may select (mouse click, for example) an icon (typically an icon designed to resemble a shopping cart) to display the list of items in the shopping cart, i.e., all items chosen to be purchased. Further, at any time during the browsing session, the customer may proceed to a checkout page wherein the items in the shopping cart may be purchased and shipped to a desired location.

[2]   Typically, the server computer hosting the website also maintains a database of information about registered customers. This information, such as, shipping address, preferred payment method, past purchases, etc., which is collectively known as a user profile, is stored in a customer database. The user profile provides the customer with the benefit of not having to enter redundant information into the website each time a purchase is made.

[3]   Another common feature of conventional websites is a "cookie" identification system. A cookie, also well-known in the industry, is a file stored on a remote computer (i.e., the computer that the customer is using to browse the website) that contains information about the commercial website, information about the remote computer, and/or information about the customer. The purpose of a cookie is to allow the server computer to retrieve the identity of the remote computer

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and/or customer and other information stored with the retrieved cookie when the customer logs onto the server. As such, cookies can be used in conjunction with shopping carts to provide better service to registered customers. The preceding features of a conventional commercial website are discussed in greater detail below with respect to **FIG. 1**.

[4]   **FIG. 1** is a block diagram of a system *100* wherein a server computer *110* and a remote computer *150* are communicatively coupled via a network connection such as the internet *105* as shown. Other network connections are practicable, such as, for example, a Local Area Network (LAN), however, the internet *105* will suffice for the discussion here.

[5]   The server computer *110* includes a CPU *115* coupled to a bus *116* that facilitates communication between the CPU *115* and other components of the server computer *110*. Other components of the server computer *110* include a Network Interface Component *111* (NIC), a memory for a product database *121*, a memory for a customer database *122*, and a memory for web-server software *120*. The NIC *111* facilitates communications between the server computer *110* and other computers, such as remote computer *150*, via the internet *105*. Although shown as separate components, the product database *121*, the customer database *122*, and the web server software *120* may reside in a single memory component or in any combination of memory components that are coupled with the bus *116*. Alternatively, the product and/or customer databases *121* and *122* may be located external to the server computer *110*.

[6]   The remote computer *150* also includes a CPU *155* coupled to a bus *156* that facilitates communication between the CPU *155* and other components of the remote computer *150*. Other components of the remote computer *150* include a NIC *151*, a memory for a cookie database *161*, and a memory for web browser

software *160*. Again, although shown as separate components, the cookie database *161* and the web browser software *160* may reside in a single memory component or in any combination of memory components that are coupled with the bus *156*. As was the case with the server computer *110*, the NIC *151* facilitates communications between the remote computer *150* and other computers, such as server computer *110*, via the internet *105*. The operation of the preceding system is described below in conjunction with **FIG. 2**.

[7] **FIG. 2** is a flow diagram of a conventional method for retrieving and using cookies between a server computer *110* and a remote computer *150*. When a customer first browses the website at step *201*, the server computer *110* attempts to retrieve a cookie associated with the commercial website by sending a request to the remote computer *150* at step *203*. The remote computer *150* then checks the cookie database *161* for the requested cookie (associated with this particular commercial website) at step *205*.

[8] If the requested cookie is not found in the cookie database *161*, the remote computer responds with a message indicating that no matching cookie has been found. The server computer *110* may then display a standard welcoming message for a new user at step *221* and the cookie retrieval methods then ends at step *223*. By not retrieving the requested cookie, the server computer *110* is unable to identify the remote computer *150* without additional customer input.

[9] If, however, the requested cookie is found in the cookie database *161*, the remote computer *150* sends a copy of the requested cookie back to the server computer *110*. Then, at step *207*, the server computer *110* accesses the customer database *122* to retrieve information from the user profile about the customer that is associated with the retrieved cookie. The retrieved information may be used, at step *209*, to display a customized welcoming message and to place previously

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stored shopping cart items back into the shopping cart for this browsing session. For example, if a customer has placed a hammer in his/her shopping cart during a previous browsing session, but did not complete the purchase, then the hammer will be retrieved from the customer database (since it was stored there when the customer first chose the item) and will consequently appear in the shopping cart.

[10] The server computer *110* then accesses a second database, the product database *121* at step *211*, to retrieve information about the items that have been restored to the shopping cart. Examples of this information include inventory quantity, current purchase price, etc. The server computer *110* may then use this retrieved product information, at step *213*, for display in the shopping cart. For example, the previously mentioned hammer (already restored to the shopping cart) is accessed in the product database. Then information about the current price of the hammer and the quantity of hammers available is retrieved for display on the shopping cart web page. The cookie retrieval method then ends at step *223*.

[11] One problem associated with the conventional method of **FIG. 2** is that the server computer *110* accesses two different databases each time a shopping cart is restored. That is, the server computer *110* accesses the customer database *122* to retrieve the shopping cart information associated with the retrieved cookie and then accesses the product database *121* to retrieve the product information associated with the items retrieved for the shopping cart. This is undesirable because accessing two different databases takes valuable computing time, and thus, may create a delay that is noticeable to the customer.

[12] Another problem is that if the customer browses the website on a computer other than the customer's own remote computer *120* that has the proper cookie stored therein, the customer's shopping cart cannot be retrieved because the proper cookie cannot be retrieved. As such, the customer must re-select all the

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items that were in his/her shopping cart when he/she last disconnected from the server computer *110*. Furthermore, customers who have yet to establish a user profile (thus, establishing a cookie on their remote computer) will also have to reselect items in their shopping cart is disconnected.

SUMMARY OF THE INVENTION

[13]   An embodiment of the invention is directed to a system and method for offering an item for sale on a website, allowing a user to browse the website via a client computer, generating a shopping cart, allowing the user to place the item in the shopping cart, and storing information about the item and the user in a single memory location in response to the browsing session being interrupted. Another embodiment of the invention is directed to a system and method is directed to allowing a user to browse a website via a client computer, determining whether the user has a shopping cart from a previous browser session, retrieving shopping-cart information from a single memory location if the user has a shopping cart from a previous browser session, and regenerating the shopping cart from the retrieved shopping-cart information.

[14]   Yet another embodiment of the invention is directed to a data carrier having computer-executable instructions operable to offer an item for sale on a downloadable webpage, to allow a user to browse the webpage via a client computer, generate a shopping cart for display on the client computer, to allow the user to place the item in the shopping cart, and to store information about the item and the user in a single memory location in response to the browsing session being interrupted.

BRIEF DESCRIPTION OF THE DRAWINGS

[15] The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same become better understood by reference to the following non-limiting detailed description, when taken in conjunction with the accompanying drawings, wherein:

[16] **FIG. 1** is a block diagram of a conventional system wherein a commercial-website server computer and a remote computer are communicatively coupled via a network connection;

[17] **FIG. 2** is a flow diagram of a conventional method for retrieving and using cookies between the server computer and the remote computer of **FIG. 1**;

[18] **FIG. 3** is a block diagram of a commercial-website server computer using a plug-in software component according to an embodiment of the invention; and

[19] **FIG. 4** is a flow diagram of a method for retrieving and using cookies between the server computer and the remote computer of **FIG. 3** according to an embodiment of the invention.

DETAILED DESCRIPTION

[20] **FIG. 3** is a block diagram of a commercial-website computer system *300* having a plug-in software component *301* according to an embodiment of the invention. The components of the system *300* are similar to the components of the system *100* described above with respect to **FIG. 1** (thus, the same reference numbers are also used), however, the system *300* of **FIG. 2** includes a plug-in software component *301* that alters the way in which the shopping browsing session

is handled between the remote computer *150* and the server computer *110*. By using a plug-in *301*, one can modify the web software *120* without rewriting the entire program.

[21]   The plug-in *301*, which is resident within the web software *120*, effectively provides a persistent-shopping-cart catalog *302* that stores information about both a customer and products in his/her shopping cart. Each customer/shopping cart entry in the catalog *302* is identified by a unique shopping-cart identification. Thus, each customer who is currently shopping is associated with a shopping-cart identification in the catalog *302*. Further, as the customer places products in his/her shopping cart, information about the products is retrieved from the product database *121* and stored in the catalog *302* and is associated with the customer's shopping-cart identification. Thus, if a customer's session ends before he/she empties his/her shopping cart, the plug-in *301* stores the customer's shopping-cart identification and information about the product's in the customer's shopping cart in the catalog *302*. Then, if the customer returns to the website, the information about products in the shopping cart can be quickly retrieved since the information is still resident within the catalog *302* of the plug-in *301*.

[22]   The software *120* can typically regenerate the customer's shopping cart from the catalog *302* more quickly that if it had to access the product database *121* and/or the customer database *122*. As discussed below, the plug-in *301* can, however, update the information regarding the products in the shopping cart from the database *121* when the customer logs back on to the website. Alternatively, the plug-in *301* can update the information at regular intervals. Furthermore, the plug-in *301* can perform the updating shortly after the customer logs back into the website so that any delay associated with the update is less noticeable to the customer. The plug-in 302 will typically store the information about products in a customer's shopping cart and associate that information with the

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customer's shopping-cart identification for a limited amount of time. For example, the plug-in **301** may store the information in the catalog **302** for 24 hours during which time the customer may return to the website and the shopping cart can quickly be restored. After 24 hours, the plug-in **301** may purge the information stored in the catalog **302** to allow additional storage space for other information relating to other customer's shopping carts to be stored.

[23] Also, as discussed below, if the customer logs onto the website from a remote computer **150** that did not store a cookie for the last transaction, the plug-in **301** can still generate the customer's shopping cart once the customer enters identifying information, such as name, address and/or customer log-in name and password. The operation of the preceding system is further described below in conjunction with **FIG. 4.**

[24] **FIG. 4** is a flow diagram of a method for retrieving and using cookies between a server computer **110** and a remote computer **150** according to an embodiment of the invention. When a customer first browses the website at step **401**, the server computer **110** attempts to retrieve a cookie associated with the website by sending a request to the remote computer **150** at step **403**. The remote computer **150** then checks the cookie database **161** for the requested cookie (associated with this particular website) at step **405**.

[25] If the requested cookie is not found in the cookie database **161**, the remote computer responds with a message indicating that no matching cookie has been found. The server computer **110** may then display a standard welcoming message for a new user.

[26] If, however, the requested cookie is found in the cookie database **161**, the remote computer **150** sends a copy of the requested cookie back to the server computer **110.** Then, at step **407**, the server computer **110** accesses

the catalog *302* to retrieve information about the customer and information about the items in the associated shopping cart. This retrieved information may be used, at step *409*, to display a customized welcoming message and to place previously stored shopping cart items back into the shopping cart for this browsing session and to display product information about the items in the shopping cart. For example, the previously mentioned hammer is associated with the shopping-cart identification, the user profile and product information in the catalog *302*. Then, when the customer is identified by retrieving the cookie having the customer's shopping-cart identification, the shopping cart web page displays the hammer, its price, its quantity available, and user profile information, all of which is retrieved from the catalog *302*. Having only accessed a single database, the cookie retrieval method then ends at step *223*.

[27]   Referring to **FIG. 3**, the plug-in *301* is capable of storing a variety of different pieces of information about products and customers in the catalog *302*. As a customer browses the website and selects different products to be placed in the shopping cart, the plug-in *301* may update the catalog *302* to reflect the changes. For example, each product available on the commercial website typically has an associated product description that is stored in the product database *121*. Once a product is selected to be in a shopping cart, the product description may be copied and stored in the catalog *302* along with the product identification, both of which are associated with the shopping-cart identification and the customer's profile. By storing the product information in the catalog *302*, the web software *120* does not need to access the product database *121* when restoring the shopping cart.

[28]   The plug-in *301* may store additional information in the catalog *302* for a particular shopping-cart identification. For example, the stock level of a product may be stored in the catalog *302* when the customer logs off or is timed out of the website. Furthermore, the plug-in 301 may update the stock level (how many of that product are in stock) by checking the product database *121* at regular

intervals even while the customer is not logged in to the website such that when the customer returns to the website, the catalog *302* reflects the correct stock level. The plug-in 301 may also update and store the product price in a similar manner.

[29]   The preceding discussion is presented to enable a person skilled in the art to make and use the invention. The general principles described herein may be applied to embodiments and applications other than those detailed below without departing from the spirit and scope of the present invention. The present invention is not intended to be limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed or suggested herein.